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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,082	03/31/2004	Alexander L. Gaeta	SP03-046	7341
22928	7590	08/18/2005		
CORNING INCORPORATED				
SP-TI-3-1				
CORNING, NY 14831				

EXAMINER
DUPUIS, DEREK L

ART UNIT	PAPER NUMBER
2883	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/815,082	Applicant(s) GAETA ET AL.	
	Examiner Derek L. Dupuis	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.



Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/31/04 & 11/4/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statements (IDS) submitted on 3/31/2004 and on 11/4/2004 have been considered by the examiner.

Drawings

2. The drawings were received on 3/31/2004. These drawings are accepted by the examiner.

Specification

3. The disclosure is objected to because of the following informalities: the US patent application serial numbers should be changed to the corresponding publication number or corresponding patent number (see paragraphs 35, 36, and 38). Appropriate correction is required.
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-9, 11-15, and 17-27 are rejected under 35 U.S.C. 102(b) as being anticipated by *Muller et al (NPL)*.

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7. Muller et al teach an optical fiber for the transmission of optical energy comprising a cladding region including a photonic band gap structure and a core region surrounded by the photonic band gap structure as shown in figure 1a. It is understood that by definition, a photonic band gap fiber of this structure transmits energy through the core region having a wavelength within the photonic band gap. Muller et al teach that the loss can be less than 20 dB/km (see paragraph 2). Muller et al also teach that the optical energy can be between 150 nm and 11,000 nm as can be seen in figure 1b. The ranges taught by Muller are also greater than 1,000 nm and between 1400 nm and 1500 nm. As taught in paragraph 4, the fiber can have a nonlinear refractive index of $3.02 \times 10^{-19} \text{ cm}^2/\text{W}$ which is less than $5 \times 10^{-19} \text{ cm}^2/\text{W}$ and which is also less than $10^{-18} \text{ cm}^2/\text{W}$. Muller et al also teach that the optical fiber is capable of supporting a temporal soliton having a peak power of greater than 1 MW and also greater than 3 MW (see abstract and paragraph 5). Muller et al teach that the core region has a lower refractive index than the average refractive index of the cladding photonic band gap structure (see paragraph 1). Muller et al also teach that the core is hollow and filled with a gaseous material such as air (see paragraph 1). The fiber is formed by a stack and draw method (see paragraph 2) and the maximum diameter of the core is less than four times the pitch of the photonic band gap structure as can be seen by simple inspection of figure 1a.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 10 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over *Muller et al (NPL)* as applied to claims 1-9, 11-15, and 17-27 above, and further in view of *Kawanishi et al (US 6,404,966 B1)*.

10. Muller et al teach that the optical fiber is capable of guiding optical energy with a wavelength in the near infra-red region. However, Muller et al do not explicitly teach that the wavelengths fall between 1680 nm and 1900 nm. These claimed ranges lie within the range encompassed by the "near infra-red region". In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05.

11. Muller et al does not teach that the optical fiber is a multi-mode fiber that supports at least two modes within the core. Kawanishi et al teach a PBG fiber. Kawanishi et al teach that it is well known in the art to use a PBG fiber as a multimode fiber to support at least two modes within a core (see column 3, line 60 to column 4, line 4). By increasing the size of the core, the fiber is able to transmit multiple modes. Kawanishi et al teaches that this results in signal degradation. However, as can be appreciated by those skilled in the art, multimode fibers have many benefits over single mode fibers when used for short range transmission such as being able to receiver light beams that enter the fiber at angles up to 25 degrees off-axis. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the PBG fiber of Muller et al to support multiple modes as taught by Kawanishi. Motivation to do this would be to make use of the benefits of multimode fibers such as being transmit light that enters the

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fiber at angles that are off-axis by 25 degrees or less. This makes coupling into the fiber easier and more efficient.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek L. Dupuis whose telephone number is (571) 272-3101. The examiner can normally be reached on Monday - Friday 8:30am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Derek L. Dupuis
Group Art Unit 2883

**KAVEH KIANNI
PRIMARY EXAMINER**

